

## **Preconception Health in North Carolina:**

**A brief history, examples of successful interventions, and a preconception health curriculum for UNC Women's Hospital**

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**PID 720239054**

**July 12, 2013**

Reader 1

Reader 2

## Wolf—Preconception Health in North Carolina

Preconception health is an emerging area of Maternal and Child Health that seeks to improve both birth outcomes and long-term health outcomes for two generations – a mother and her child. Because preconception health is a relatively new area of public health, this paper seeks to introduce the reader to the topic through defining preconception health and giving a brief history of its increasing role in the world of public health. It then outlines a successful North Carolina preconception health initiative to illustrate preconception health in practice. Finally, this paper describes a new educational preconception health program entitled “Preparing for Pregnancy: Mind, Body, and Spirit” to be implemented at the Women’s Health Information Center at the University of North Carolina at Chapel Hill’s Women’s Hospital. The facilitator’s guide, class materials and recruitment materials and evaluation are included as appendices.

### **DEFINITION**

In 2006, Centers for Disease Control (CDC) published a seminal issue of the Morbidity and Mortality Weekly Report (MMWR) that focused on the science and importance of preconception health. In that article, preconception health is defined as “a set of interventions that aim to identify and modify biomedical, behavioral and social risk to a woman’s health or pregnancy outcome through prevention and management.”<sup>1(p.3)</sup> Preconception health works to maximize a woman’s health before pregnancy in order to minimize the risk of adverse outcomes for moms and babies during and after pregnancy.

### **HISTORY**

Women have long been advised to be healthy before becoming pregnant. In the early years of recorded history, Plutarch wrote that the ancient Spartans “ordered the maidens to exercise themselves with wrestling, running, throwing the quoit and casting

the dart to the end that the fruit they conceived might, in strong and healthy bodies, take firmed root and find better growth.”<sup>2</sup> In more modern times, this pre-conceptual focus was replaced with idea that good obstetric care centered around prenatal care.<sup>3</sup> However, in the past thirty years, a shift toward attending to a woman’s health before she is pregnant has re-emerged.<sup>3</sup> In the early 1980s, leaders in maternal and child health realized that the promise of reduced fetal anomalies through prenatal care was not being realized as they had anticipated. These leaders advocated for a redefinition of the United States’ perinatal prevention paradigm, asking that preconception health be included.<sup>3</sup>

In 1979, The US Department of Health, Education, and Welfare published one of the first federal position papers to acknowledge the importance of preconception health.<sup>3,4</sup> The paper called for the development of a continuum of child health care, including for the first time an element on pre-pregnancy care.<sup>3</sup> In 1985, the Institute of Medicine published the book, *Preventing Low Birthweight*.<sup>5</sup> This publication highlighted the fact that women were not receiving prepregnancy care as a way of preventing poor birth outcomes, despite research highlighting its importance.<sup>5</sup> In the mid 1980s, Moos and Cefalo, two clinicians at the forefront of the preconception health movement, received a grant from the American College of Obstetrics and Gynecology (ACOG) to create a preconception health checklist for providers.<sup>3</sup> This checklist came to be known as the preconception health appraisal. It directed providers to ask each female patient about her reproductive life plan—a general idea of if the woman wanted to have children, and if so, when she how many she wanted to have—and helping her achieve that goal.<sup>3</sup> First introduced in local health departments in North Carolina, the appraisal was soon being used by both public and private providers nationwide.<sup>3</sup> This became a successful

initiative, and in 1989 the Expert Panel on the Content of Prenatal Care stated that the preconception visit may be the single most important health care visit in order to ensure a healthy mom and healthy baby.<sup>6</sup>

Starting in the 1990s, the importance of preconception health became more widely recognized. *Healthy People 2000*, published in 1990, mentioned preconception health in its list of the country's most highly prioritized health goals for the next ten years.<sup>7</sup> It included preconception care as both a service and protection objective, stating the goal that at least 60% of primary care providers provide age-appropriate preconception care and counseling.<sup>7</sup> In 1995, ACOG published a technical bulletin on preconception care that had a novel interpretation of who preconception health can benefit.<sup>8</sup> In ACOG's reframing of the subject, they argue that rather than simply increasing healthy birth outcomes for the baby, preconception health empowers women and their partners to make informed reproductive choices. They state that, "After women have been informed of the increased risk pregnancy may pose to their health or the health of a fetus or both, they can accept the increased risks, choose to modify their risks or opt to avoid childbearing."<sup>8(p.2)</sup> This new understanding saw the role of preconception health evolve from not only protecting the health of future children but also allowing women to make more educated choices about their reproductive health.

*Healthy People 2010* was released in 2010. While it did not use the term "preconception health" in its goals, health outcomes that require preconception action appeared, such as reducing the occurrence of neural tube defects and reducing the number of babies born with low birth weight.<sup>9</sup> Ten years later *Healthy People 2020* was published. *Healthy People 2020* devotes an entire subsection of its Maternal, Infant and

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Child Health section to preconception health.<sup>10</sup> The objectives of this subsection echo many of those in *Healthy People 2010*, but also include increasing the proportion of women who give birth who discussed preconception care with a health care provider prior to pregnancy and reducing the proportion of persons age 18-44 with impaired fecundity as specific issues to be addressed through preconception health.<sup>10</sup>

In 2004, a public-private partnership was formed called the Preconception Health and Health Care Initiative (PHHCI).<sup>11</sup> The initiative is composed of a steering committee and five workgroups: consumer, clinical, public health, research and surveillance, and policy and finance.<sup>11</sup> The initiative's vision included high reproductive awareness among men and women of childbearing age, that all pregnancies be intended and planned, and that all women of childbearing age have health coverage and receive the screenings and services they need to improve their health and reduce the risk of a poor birth outcome.<sup>11</sup> The initiative has made huge strides for the preconception health movement, including publishing a series of special journal issues that made information on preconception health accessible to untold numbers of health professionals.<sup>11</sup>

This series of special journal issues were published addressing the importance of preconception health were published between 2006 and 2008. The Maternal and Child Health Journal published *Preconception Care: Science, Practice, Challenges, and Opportunities* which covered a wide array of topics including promising practices, preconception health in an international context, and social marketing for preconception health.<sup>12</sup> This journal focused on the role of public health in preconception health. In December 2008, The American Journal of Obstetrics and Gynecology (AJOG) released a special issue entitled *Preconception Health and Health Care: The Clinical Content of*

*Preconception Care*.<sup>13</sup> AJOG's articles provide clinical preconception guidelines for practitioners. The articles focus on various high-risk consumers such as those with psychiatric conditions, chronic disease, and obesity, while also addressing clinical guidance on immunizations, vitamin intake and common substance exposures during the preconception period.<sup>13</sup> Women's Health Issues's special issue was published in December 2008 as well.<sup>14</sup> This issue focused on the systemic issues of preconception health, including how best preconception health could reach consumers with Medicaid, those utilizing community health clinics and those receiving Title V funding.<sup>14</sup> These three articles triangulated the challenges of preconception care by addressing the various health workers that all have a place in increasing access to and knowledge of preconception care. The articles highlighted its importance and provided a call to action for all public health workers, clinicians and policy makers to prioritize this emerging field.

With an increasing amount of research supporting that benefits of preconception health, preconception health interventions are being implemented across the country. Preconception health has become so central to the world of public health that it has been repeatedly and increasingly highlighted in the *Healthy People* national series, one of the flagship documents of our health goals as a country. It is evident that preconception health is only gaining ground, and becoming a central aspect of maternal and child health.

### **Life-course Perspective and Looking toward the future**

In the early 2000s, a new theory called the life-course perspective emerged and began to gain attention and popularity in the field of maternal and child health.<sup>15</sup> Lu and Halfon's interpretation of life-course involves the understanding that an individual's health outcomes are a result of their health and experiences over a lifetime, as well as their

mother's and grandmother's health.<sup>15</sup> In their seminal 2003 work on the subject, Lu and Halfon explain that a woman's health before she becomes pregnant is a central predictor of her baby's health.<sup>15</sup> The article also introduced the idea of allostatic load, the notion that chronic stress over a lifetime can impact birth outcomes.<sup>15</sup>

The life course perspective offers new insight to the importance of preconception health. It affirms that a woman's health is integrally related to the health of her child. Additionally, it introduced the important role of factors not traditionally associated with pregnancy health, such as stress. The life course perspective can be used as a tool for understanding and relaying the importance of preconception health. Lu and Halfon's publication and its positive reception by the world of Maternal and Child Health has encouraged many public health officials to view preconception health through the life-course perspective. It has also inspired a novel way of conceptualizing preconception health so that it addresses generational and life-long health.

The field of preconception health continues to grow. The CDC has acknowledged over six new scholarly articles on preconception health per month for the past year. With growing evidence of its power to influence our next generation, preconception health has captured the attention of the field of Maternal and Child Health. With more research articles and studies being conducted all over the country, the CDC is constantly scanning for new articles that point to new and exciting preconception health findings.

### **Why is preconception health important?**

Despite advances in medicine and prenatal care over the last century, birth outcomes in the United States are worse today than many other developed countries.<sup>16</sup>

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Premature birth and fetal anomalies are the two most prevalent poor birth outcomes.<sup>16</sup>

The 2006 MMWR on preconception health, a publication led by the PHHCI, addresses this problem, along with providing recommendations to improve preconception health in the U.S.<sup>1</sup> The report states that preconception health is critical because several risk behaviors and exposures affect fetal development and subsequent outcomes. The report further explains that exposures early in pregnancy result in the greatest adverse effects, all too often before women enter prenatal care and often before they even know they are pregnant.<sup>1</sup>

According to the 2011 Pregnancy Risk Assessment Monitoring System (PRAMS), 37.7% of pregnant women in North Carolina knew they were pregnant before four weeks gestation, and 87.3% knew by eight weeks gestation.<sup>17</sup> Looking at the chart below (Figure 1), a large proportion of highly sensitive periods of development occur before four weeks gestation, with almost all occurring before eight weeks.<sup>18</sup> This leaves women little time to stabilize their health after conception, even if she is aware of her pregnancy. If women are healthy before pregnancy, then their developing fetuses will be less susceptible to abnormalities during these extremely important times in fetal development, often occurring before the woman is even aware she is pregnant.



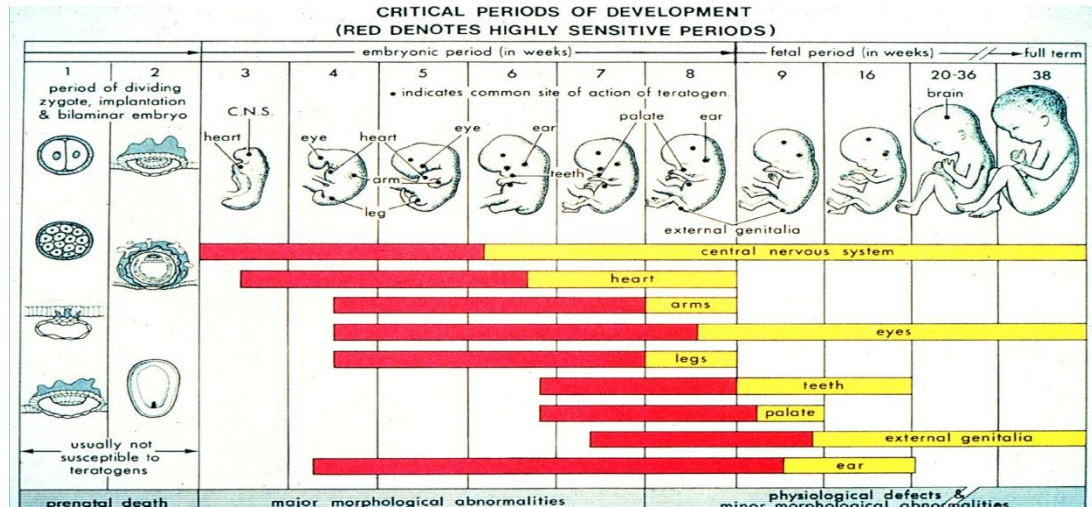


Figure 1: Highly Sensitive Periods of Gestation, adapted from *Critical Periods in Development*<sup>18</sup>

A critical piece of preconception health is the goal of reducing unplanned pregnancies. The CDC defines unplanned pregnancy as a pregnancy that is mistimed, unplanned, or unwanted at the time of conception.<sup>19</sup> In 2006, 49% of pregnancies in the U.S. were unintended.<sup>19</sup> According to PRAMS, 42.7% of live births in 2011 in North Carolina were the result of unintended pregnancies.<sup>20</sup> Women experiencing unintended pregnancy are less likely to obtain early prenatal care and their babies are at an increased risk of both low birth weight and premature birth.<sup>21</sup> Preconception health addresses this problem by including family planning as a central tenant, and it seems to be having a positive effect. A clinical trial completed by Moos and Cefalo has shown that the provision of preconception care in the clinical setting can increase pregnancy planning and intention.<sup>22</sup>

Additionally, because women who did not plan their pregnancies are less likely to be aware of their pregnancies in the early weeks, they are far less likely to seek out early prenatal care.<sup>20</sup> Many of these women will not have contact with a medical provider that can give them advice on how to be healthy until the conclusion of many critical periods

in their baby's development. Preconception care addresses unplanned pregnancies in two ways: it encourages women to use contraception until they are ready to get pregnant, and it also gives women the tools to be healthy before pregnancy, so that if an unplanned pregnancy occurs, the mother will be in good health.

Another example of a preconception health intervention that has well-documented and far-reaching positive effects for the next generation is the need for folic acid supplementation. Folic acid is extremely important because it can help prevent major birth defects of the baby's brain and spine including anencephaly and spina bifida.<sup>23</sup> Folic acid has such strong evidence that it lowers the rates of Neural Tube Defects that in 1992, the U.S. Food and Drug Administration mandated adding folic acid to all enriched cereal grain products.<sup>24</sup> In the years following the mandatory fortification, Spina Bifida rates went down 30%.<sup>24</sup> However, most women need more than the amount provided in cereal. In order to reduce the chances of a neural tube defect by 50-70%, women are advised to take 400 mcg of folic acid daily for one month before pregnancy, with higher doses recommended for women who have had a neural tube defect with a previous pregnancy.<sup>24</sup> Preconception care provides an opportunity to inform women of the importance of taking folic acid before pregnancy to maximize their chances of having a healthy baby.

Chronic conditions such as diabetes and PKU can have devastating effects on a developing baby if they are managed incorrectly during pregnancy. Poorly controlled diabetes in the first weeks of pregnancy can increase the risk of having a baby with a birth defect by 30-40% as compared to a 2% increased risk for women with well-controlled diabetes.<sup>25</sup> Women with poorly controlled diabetes are also at an increased risk

for pre-eclampsia, premature birth and fetal death.<sup>25</sup> Babies of women with poorly controlled PKU are at an increased risk for mental retardation, poor head growth, heart defects and other birth defects.<sup>26</sup> Helping women control these chronic conditions is a central part of preconception health. Preconception counseling that assists women in controlling these chronic conditions can help avoid these devastating effects on developing babies. Additionally, helping women to better manage their chronic conditions will improve their own health and quality of life, whether or not she chooses to have children.

These are only a few examples of the many risk factors that can be mitigated with preconception health care. The CDC's 2006 MMWR lists fourteen conditions, exposures or medications that, when addressed in the preconception period, can minimize poor birth outcomes. These conditions include obesity, anti-epileptic drugs, folic acid deficiency, Hepatitis B, HIV/AIDS, diabetes, STDs, alcohol misuse, isotretinoin, oral anticoagulant, hypothyroidism, maternal phenylketonuria, rubella seronegativity, and smoking.<sup>1</sup> Each of these conditions, exposures, or medications can be addressed during preconception care, minimizing the risk that it poses to a developing baby in the earliest stages of pregnancy.

The MMWR report also outlines ten recommendations to address preconception issues like those listed above. These recommendations include individual responsibility across the lifespan, consumer awareness, preventative visits, interventions for identified risks, interconception care, prepregnancy check up, health insurance coverage for women with low incomes, public health programs and strategies, research, and monitoring improvements.<sup>1</sup> To begin understanding how these recommendations are successfully

being implemented into programs and interventions, preconception health promotion in North Carolina will be examined next.

## **Preconception Health Promotion in North Carolina**

The March of Dimes North Carolina Preconception Health Campaign (NCPHC) is an initiative aimed at improving birth outcomes in North Carolina by reaching out to women with important health messages before they become pregnant.<sup>27</sup> This campaign was formerly the North Carolina Folic Acid Campaign, which primarily sought to improve birth outcomes through folic acid awareness and use. The new campaign seeks to address a wider range of issues, including reducing infant mortality, birth defects, and chronic health conditions in women. The campaign also aims to increase planned pregnancies in North Carolina.<sup>27</sup>

The campaign has four highlighted initiatives: the community ambassador program, the office champion program, the Latino campaign, and media and materials. The community ambassador program trains women across the state to be community health educators, on various topics, with an emphasis on preconception health. The office champion program creates a peer point-person in physicians' offices to remind physicians of the importance of recommending daily vitamin use to all women of reproductive age. The office champion role has recently been expanded to reminding fellow physicians of the importance of talking about other preconception health issues such as healthy weight. The Latino initiative focuses on the disproportionate amount of Latina women who give birth to a baby with a neural tube defect. This initiative includes special messaging and advertising in Spanish about the importance of taking folic acid.<sup>27</sup> Media and materials is a series of campaigns touting the importance of folic acid use and

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general preconception health. These four initiatives represent the goal of addressing preconception health through many venues, including public health initiatives, clinical initiatives and media campaigns.

Healthy *Before* Pregnancy, an educational intervention for young women, is another of NCPHC's new and far-reaching initiatives.<sup>28</sup> As most women in North Carolina have their first child in their young adult years, the Healthy *Before* Pregnancy curriculum targets high school students. The curriculum consists of a teacher's guide, a pretest and posttest, activities, handouts and five lesson plans. The lesson plans are titled: Pathways to Poor Birth Outcomes, Multivitamins: Take Them for Life, Healthy Weight Matters, Preventable Factors That Can Lead to Poor Birth Outcomes, and Reproductive Life Planning.<sup>28</sup> The entirety of the Healthy *Before* Pregnancy is available on the Every Woman North Carolina website free of charge. As few other curriculums exist for a high school target audience, this resource fills a gap in the preconception health toolbox. While it is impossible to know exactly how many schools have utilized the Healthy *Before* Pregnancy curriculum, the March of Dimes Statewide Coordinator estimates that it has been introduced in over 100 classrooms since its inception in March 2012 (Amy Mullenix, written communication, June 2013).

Another educational intervention present in North Carolina is "Ready, Set, Plan!"<sup>34</sup> This curriculum is a partnership between the North Carolina Department of Health and Human Services, Division of Public Health - Women's Health Branch, CARE-LINE, Center for Health and Healing, and the North Carolina Healthy Start Foundation. This curriculum encourages couples and families to learn about planning for their families and to put this learning into action.<sup>34</sup> This curriculum is targeted toward the

community at large, and offers the opportunity for individuals and couples to learn from one another. This curriculum was also referenced in the development of “Preparing for Pregnancy.”

## **Preconception Health Promotion at UNC Women’s Hospital**

Given the significant opportunities for improving health outcomes and the groundbreaking work already in place in North Carolina, leaders at UNC Women’s Hospital felt it was time to develop and offer a class to prospective parents on preconception health. This would add to the existing courses offered that focus on pregnancy and the postpartum period at UNC. The Preparing for Pregnancy: Mind, Body and Spirit class is being developed as a part of a grant the Center for Maternal and Infant Health received from the March of Dimes.

### **Why a class for preconception health?**

This class directly addresses many of the preconception health recommendations made by the CDC. As a flagship research university, the University of North Carolina at Chapel Hill aims to set the example of putting research into practice. The 2006 MMWR on preconception health includes the recommendation to encourage every woman, man and couple to have a reproductive life plan.<sup>1</sup> To operationalize this recommendation, the report suggests developing and disseminating reproductive life plan materials to people of reproductive age. “Preparing for Pregnancy” will introduce its participants to the reproductive life plan and ask that they create one with their partner upon leaving the class. The MMWR’s second recommendation is to increase consumer awareness of the importance of preconception health behaviors and preconception health services,

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including an action step to develop, evaluate and disseminate educational curricula.<sup>1</sup>

“Preparing for Pregnancy” takes this action step by making preconception health information available to the general public through a brief education intervention.

A class is uniquely suited for a preconception intervention. Because preconception health is an emerging field, much of the information about preconception health is simply not widespread knowledge. Only 12% of women know that they need to take folic acid before pregnancy, but 86% of women said they would take folic acid supplements if their doctor recommended it.<sup>29</sup> “Preparing for Pregnancy” is taught by a clinician, giving women and their partners an opportunity to learn about safe and healthy pregnancy from a health practitioner.

The class is designed to give women information about how to have a safe pregnancy and healthy baby, as well as present risk factors for an unhealthy pregnancy and poor birth outcomes. The participants will be able to complete an informal mental “self risk assessment” throughout the class. If they find they do possess risk factors for a complicated pregnancy, they will be given the assistance to seek out resources to mitigate those risk factors. An important aspect of the class is encouraging participants to engage with their health provider before getting pregnant, especially if they have risk factors for a high-risk pregnancy. This addresses the CDC’s preconception recommendations of increasing preventative visits, interventions for identified risks, interconception care, and prepregnancy check ups.<sup>11</sup>

### **Preparing for Pregnancy: Mind, Body, and Spirit**

The subjects addressed in “Preparing for Pregnancy” are based on a CDC initiative called the Show Your Love Campaign. The Show Your Love Campaign is a

national initiative that encourages engaging in healthy behaviors before the decision to conceive a child.<sup>16</sup> It was developed by the PHHCI in partnership with the Rhode Island Department of Health.<sup>29</sup> The campaign encourages women to “show their love” to themselves, their partners and their future children by getting healthy before pregnancy.<sup>16</sup> The campaign utilized research on the most common and most serious health problems that can be mitigated with intervention to compose a list of the most important topics to address preconceptionally.<sup>16</sup> The topics are as follows:

1. Plan pregnancies
2. Eat healthy foods
3. Be active
4. Take 400 mcg of folic acid daily
5. Protect myself from STIs and other infections
6. Avoid harmful chemicals, metals and other toxic substances around the home and in the workplace.
7. Make sure my vaccinations are up-to-date
8. Manage and reduce stress and get mentally healthy
9. Stop smoking (and get partners and family members to stop smoking too)
10. Stop using street drugs as well as prescription medicine that are not mine.
11. Reduce my alcohol intake before I try to get pregnant, and stop drinking while trying to get pregnant.
12. Stop partner violence
13. Manage my health conditions such as asthma, diabetes, and overweight.
14. Learn about my family’s health history.



15. Get regular checkups. See my doctor as needed.

The goal of the class is to provide a space in which participants can learn from an instructor and from one another about how to have a safe and healthy pregnancy. The objectives of the class are as follows:

**Class Objectives:**

1. Introduce participants to the concept of reproductive life planning
2. Address all 15 of the Center for Disease Control's steps for preparing for a healthy pregnancy
3. Provide referrals for participants who, after learning about how to plan for a pregnancy, feel they need more specialized information from specialists such as Maternal and Fetal Medicine specialists, geneticists, or mental health providers
4. Create a safe space in which all of the participants can have their questions answered, or can receive a referral to a specialist who can answer their questions

The class will be held at the Women's Health Information Center (WHIC) at UNC Hospital. The WHIC provides many different classes about women's health including childbirth classes, CPR classes, baby massage classes and a group called Mentoring Other Moms. "Preparing for Pregnancy" will fit well into this organization, as it aligns with their mission to help make health information more accessible to women. Preparing for Pregnancy also fills a gap in their services, as UNC Hospitals do not currently offer any preconception or interconception health classes. In fact, all of their classes are for women that are already pregnant or have given birth. The class will meet once and run for an hour and a half. If the class receives considerable interest and the participants feel

that not all of their questions were answered in one session, the possibility of meeting more than once will be explored.

Kim Hamden, CNM, RN, will teach “Preparing for Pregnancy.” Hamden is a Certified Nurse Midwife and has a wealth of experience working with families. Hamden delivered babies early in her career, and she has worked the past six years as a postpartum nurse at UNC Women’s Hospital. She is passionate about spreading information about preconception and interconception health. Her experience working with women’s health, maternity, and infant medical practitioners in the hospital will allow her to make appropriate referrals for class participants. Most importantly, her work with this project is strongly supported by her colleagues and leaders in the Division of Midwifery.

### **Recruiting Participants**

Two months prior to the first class, which will be held in September 2013, advertising and recruitment will begin. A representative from the Center for Maternal and Infant Health will promote the class at meetings for nurses, family practitioners, gynecologists and other health professionals in the area. The representative will also visit satellite clinics in the area to promote “Preparing for Pregnancy.” The representative will explain that the target audience is for women and their partners that are thinking about pregnancy in the near or the distant future. Practitioners will be given a flyer to distribute to patients explaining the class. Flyers for the class will also be placed around UNC hospitals, as well as in areas such as gyms and community centers in the area. A sample flyer can be found in Appendix 1.

The class will be open to women and their partners, but the recruitment process will make clear that women without partners, or who have a partner who cannot attend, are encouraged to attend. While the class addresses many issues that involve only women, aspects of the class include reproductive life plans and talking to your partner about your readiness to have a child.

The class was written with the understanding that there is no way to guarantee a healthy pregnancy, there are only ways of maximizing the chance of having a healthy pregnancy by minimizing risk factors. This message will be relayed to participants, and discussed during the class's introduction.

### **Class Structure**

When deciding on the class' structure, we sought out a style that facilitated conversation, allowed participants to learn from one another, and promoted comfort in order to address challenging material. "Preparing for Pregnancy" borrowed aspects of CenteringPregnancy®, an evidence-based group care intervention that has been proven to increase participants comfort level and has shown promise in improving birth outcomes as compared to women who receive individual care.<sup>31</sup> At its most basic level, CenteringPregnancy® is a group of women and their partners discussing various aspects of the pregnancy experience with a practitioner. "Preparing for Pregnancy" mimics this model, with a slightly different focus. The CenteringPregnancy® model promotes safety, efficiency, effectiveness, timeliness, culturally appropriate care and more equitable care.<sup>28</sup> The CenteringPregnancy® model of care has 13 essential elements. Some of these elements simply cannot be translated to "Preparing for Pregnancy" because the

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class does not deliver health services directly and does not meet more than once. The elements of CenteringPregnancy® that will occur in Preparing for Pregnancy are:

1. A facilitative leadership style is used
2. Attention is given to core content, although emphasis will vary
3. The group is conducted in a circle
4. Group conduct honors the contribution of each member
5. Group size is optimal to promote the process
6. Involvement of support people is optional
7. There is an ongoing evaluation of outcomes<sup>32</sup>

Using these evidence-based elements as a guide, the class will be a combination of instruction, discussion, and addressing participants' questions. Upon arriving, each class participant will complete an intake survey about questions and concerns they have about preparing for a first or subsequent pregnancy.

The intake survey (Appendix 2) asks participants if they have questions about any of the following topic areas: medications, vitamins, diet, substance use, health problems, previous pregnancy complications, weight, genetic conditions, immunizations, effect of pregnancy on home and work life, and birth control. By collecting these sheets, the instructor can see if there are any common concerns, and can also identify the nature of the participants concerns. If most participants are concerned with diet and exercise, the class can focus on healthful living; if participants are concerned with the emotional toll of adding a child to the family, the class can focus on the social or emotional aspects of preparing for pregnancy and parenthood. While the class will have a set agenda of topics to cover, these intake surveys will allow the instructor to better address concerns and to

spend additional time addressing common areas of interest, as per the Centering model. Demographic information will also be collected for evaluation purposes.

As with most CenteringPregnancy® classes, the class will open with an icebreaker. With the participants sitting in a circle, the participants will be asked the following two questions, which will appear on the first page of the flipbook:

1. What is your happiest memory as a child?
2. What would you like to be doing when your youngest child is 20 years old?

The facilitator will remind the participants to think about families and what they hope for the future. This icebreaker will allow participants to get to know one another while getting into the family oriented mindset for the class.

The full presentation prepared for the class, along with speaker notes and more detailed information is in Appendix 3.

### **Challenges of “Preparing for Pregnancy: Mind, Body, and Spirit”**

While the class provides many opportunities, it also poses challenges. First, preconception health and risk factors are different for each woman or couple. With the patient-specific nature of preconception care, it is difficult to address all of the possible risk factors in their entirety in a group setting. The CDC guidelines for the most important preconception health subjects served as a crucial guide to determining the class content. Because of the volume of risk factors, it is impossible to go into detail about each in the allotted class time. While participants will not get exhaustive information on each individual risk factor, they will be given referrals to additional information and health professionals that can help them learn more about how to mitigate the risk factors they possess.

Another challenge of “Preparing for Pregnancy” is that its participants will be planning for pregnancy, and planned pregnancies have a lower risk of many complications such as prematurity, low birthweight and fetal anomalies.<sup>21</sup> This class may not reach the group that is at heightened risk for poor birth outcomes. A common problem in preconception health is reaching women who do not believe they will get pregnant. However, this class is essential for the preconception health movement as well as for UNC Hospital. Women who are planning pregnancies may not have crucial information about how to best prepare for pregnancy or are aware that they have risk factors that can be minimized before pregnancy. As stated earlier, 57.3% of the live births in North Carolina in 2011 were the result of an intended pregnancy, but only 29.2% of North Carolina’s pregnant women took multivitamins one month prior to pregnancy.<sup>32</sup> There is a need for educational intervention for all women, even those who are planning pregnancies.

### **Evaluating “Preparing for Pregnancy: Mind, Body, and Sprit”**

At the end of the class, participants will be asked to fill out a short survey about their experience in the class. This exit survey can be found in Appendix 4. The survey asks participants what they learned from the class, if anything in the class affected their plans about when to get pregnant, and what concrete steps the participants plan to take when they leave the class. Finally, the survey will ask if the class affected the participant’s decision about when to start trying to become pregnant. Because much of the class will be driven by the participants’ interests and questions, the evaluation seeks to measure the extent to which the participant was satisfied with the information given, and if she plans to make changes in her own life based on this information.

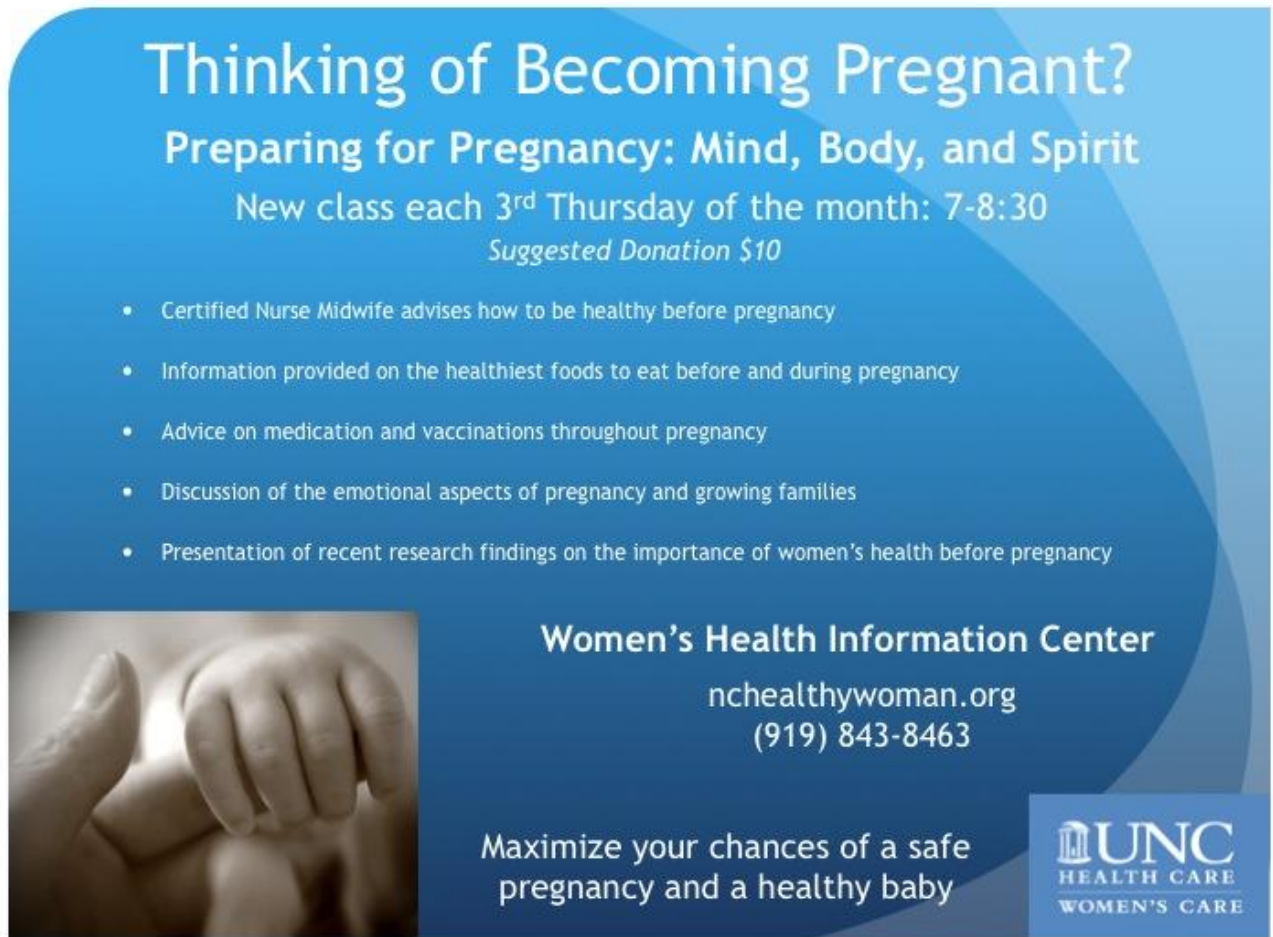
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The demographic information collected at the beginning of the class will be used to identify who the class is reaching. If we find that any age groups, racial groups, or groups of a certain insurance status are underrepresented, we will make a greater effort to reach those groups with expanded recruitment strategies.

### **Conclusion**

The University of North Carolina at Chapel Hill is a flagship research university. It is important that the institution offer venues for the general public to learn about the latest research, especially when this research offers the possibility of better health for individuals and their families. While preconception health has only been in the public health spotlight for only twenty years, the evidence of its effectiveness is continually demanding more attention from clinicians and public health workers nationwide. Preconception health provides unique point of entry into a family. Health workers have the opportunity to positively influence the health of a woman, her future children, and even her future grandchildren. The “Preparing for Pregnancy: Mind, Body, and Spirit” fills a gap in UNC hospital’s services to women and families, and allows women and their partners access to vital information that can maximize their chances of a safe pregnancy and a healthy baby.

**APPENDIX 1**  
**RECRUITMENT FLYER**



The flyer has a blue background with a large white arrow pointing to the right. The text is in white and black. At the bottom left, there is a small photograph of a hand holding a baby's foot.

# Thinking of Becoming Pregnant?

## Preparing for Pregnancy: Mind, Body, and Spirit

New class each 3<sup>rd</sup> Thursday of the month: 7-8:30  
*Suggested Donation \$10*

- Certified Nurse Midwife advises how to be healthy before pregnancy
- Information provided on the healthiest foods to eat before and during pregnancy
- Advice on medication and vaccinations throughout pregnancy
- Discussion of the emotional aspects of pregnancy and growing families
- Presentation of recent research findings on the importance of women's health before pregnancy

**Women's Health Information Center**  
nhealthywoman.org  
(919) 843-8463

Maximize your chances of a safe pregnancy and a healthy baby

**UNC**  
HEALTH CARE  
WOMEN'S CARE



## APPENDIX 2

### Intake Survey

These questions are for research purposes only:

1. How old are you? \_\_\_\_\_
  2. How many children do you already have? \_\_\_\_\_
  3. What kind of insurance do you have? \_\_\_\_\_
  4. What is the highest level of education you have completed? \_\_\_\_\_
  5. Why did you decide to take this class? \_\_\_\_\_
- 
- 

Please circle the numbers of the questions you would like addressed.

1. Are the medications that I am currently taking safe for pregnancy? Are there medications that I should avoid?
2. Should I begin taking prenatal vitamins or folic acid before becoming pregnant? If so, when should I begin taking them?
3. Are there things I can do to improve my diet to help increase my chances of a health pregnancy? What about caffeine? Alcohol? Cigarettes?
4. Do I have any health problems (such as diabetes, high blood pressure, thyroid problems, asthma, depression, obesity, epilepsy, lupus, sickle cell disease...) that should affect a pregnancy? If so, what steps can I take to minimize their effect? Do I need a referral to a Maternal Fetal Medicine specialist to discuss my health issues before getting pregnant?
5. I had complications with a previous pregnancy (such as preeclampsia, preterm labor, gestational diabetes). What steps can I take to help ensure that my next pregnancy is as healthy as possible? Do I need a referral to a Maternal Fetal Medicine specialist prior to my next pregnancy?
6. Is my weight ok? If I am significantly overweight or underweight, how will this affect pregnancy? Would I benefit from a session with a nutritionist prior to pregnancy?

## Wolf—Preconception Health in North Carolina

7. Could my pregnancy be at risk because of genetic conditions that run in my family? Would I benefit from a referral to a genetic counselor?
8. Are my immunizations up to date?
9. How will a pregnancy and having a baby affect my home life and work? Are there long term plans I should be considering now?
10. What can I do to improve my chances of conceiving? When should I go off the birth control I'm using in order to conceive?
11. What other steps can I take to help me have the best possible pregnancy?

Are there any other questions you hope to have addressed today? \_\_\_\_\_

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**APPENDIX 2: FLIP CHART PRESENTATION FOR “PREPARING FOR PREGNANCY: MIND,  
BODY AND SPIRIT”**



## Icebreaker

- What is one of your happiest memories as a child?
- What would you like to be doing when your youngest child is 20-years-old?

## Facilitator notes for icebreaker

- “We’re going to be talking about health and wellness today, and how to prepare to have a safe and healthy pregnancy. In order to get into the spirit of talking about family and thinking about the future, we’re going to start with a quick icebreaker. This will also help us get to know each other a little better. So here (point to flipbook) are two questions that we’ll each introduce ourselves with. Just pick one and think about it a little bit. Then we’ll go around the circle and say our names and a brief answer to one of the questions. Because we don’t have much time, just a few sentences would be great.”
- **The facilitator should answer the question as well. It is important that the facilitator answer the question to introduce her as a participant/facilitator rather than an instructor.**

**What is  
preconception and  
interconception  
health, and why is  
it important?**

## Facilitator notes for 'What is preconception and interconception health, and why is it important?'

- “The name of this class is Preconception and Interconception Health. Preconception means the time before a woman’s first pregnancy, and interconception means the time between a woman’s pregnancies. Research is showing that a woman’s health before pregnancy is one of the best indications for the baby’s health. Today we’ll talk about how to be healthy before pregnancy in order to increase your chances of having a healthy pregnancy, carrying your baby to term, and having a healthy baby.
- While I have had a lot of experience with pregnancy as a [insert position/experience here], this class is meant to be a conversation, not me lecturing to you. Don’t worry about taking notes. Everyone will get a packet outlining all the information we talk about as well as things we may not get to today. I hope that anyone with experience will share it with the group, and I hope anyone with questions will ask them. This class is for you all, so it will be driven by what you all want to talk about. **After the class, I’ll stay for a few minutes if there are any individual or private questions you need answered.** Are there any questions before we start the conversation?”

# 1. Plan pregnancies



### Facilitator notes for 1—Plan pregnancies

- “Planning pregnancies allows you and your partner (if you have one) to be physically, emotionally and financially prepared for pregnancy and parenthood. Mom’s health before pregnancy is one of the best predictors of baby’s health.
- Contraception is important **at all times** you are not actively trying to get pregnant. This means before you are ready to get pregnant and after pregnancy. The time it takes to get pregnant after stopping birth control varies. For some couples it happens the very next month, for others it can take up to a year. There is no way to predict how long it will take you to get pregnant.”
- *Here is where we introduce the idea of the **Life Map**. It is important to emphasize that Life Maps don’t have to be complicated or exhaustive. Give some brief examples such as ‘I want to have two or three kids before I’m 35. In order to have them 18 months apart I want to get pregnant by 30 or 31. So I want to start thinking about getting healthy now, and get serious about preparing my health in the next year.’* The Life Map (Reproductive Life Plan). “The Life Map is important to keep your goals in mind and plan accordingly. Research suggests it is safest to get pregnant 18 months or longer after your previous baby was born.”

## 2. Eat healthy foods

### Facilitator notes for 2—Eat healthy foods

- Eating healthy is a great habit to get in before becoming pregnant.
- *Be sure to integrate the weight conversation into both the diet and exercise section.* Healthy weight is extremely important to achieve before pregnancy; physicians recommend a BMI between 18.5 and 25.
- Top 10 “Brain foods” as identified by Michael Lu:
- Legumes, Eggs, Nuts and seeds, Olive oil, Alaskan wild salmon, Yogurt and kefir, Whole grains, Dark green vegetables (spinach, collards, kale and broccoli), Prunes, raisins and blueberries, Oranges, red bell peppers and tomatoes.
- Top 10 “toxic foods”
- Swordfish, shark, king mackerel, and tilefish, Soft cheeses and unpasteurized milk, Hot dogs, lunch meats, deli meats, raw or smoked seafood, Raw or undercooked meats, Unwashed vegetables, raw vegetable sprouts, and unpasteurized juices, Liver, Saturated fats, trans fats, and partially hydrogenated oils, Added sugars, Refined flour, Herbal preparations (in large amounts)

## 3. Be active

### **Facilitator's notes for 3—Be active**

- Again, being at a healthy weight is so important. Being active is good for your metabolism and your heart. It's also a great stress reducer!
- Ask participants how they get exercise, even when they're busy.
- "What are some easy ways to increase exercise in your daily life?" (Example answers: take the stairs, park farther from where you're going, take evening walks—these things really do make a difference!)
- While most kind of exercise is safe and encouraged, some high impact exercise or exercise that includes lots of jumping or difficult balancing. So if you like that kinds—do it before you get pregnant to help yourself get healthy, but be careful when you're trying to get pregnant. Also, running during pregnancy is usually OK if you were a runner beforehand. If you plan to run during your pregnancy, make sure you're keeping up with it beforehand.

## **4. Take 400 mcg of folic acid daily**



#### **Facilitator's notes for 4—Folic acid**

- It is recommended that all women of child bearing age take a daily vitamin that contains at least 400 mcgs of folic acid every day!
- You should take folic acid for at least 1 month before trying to get pregnant. Take folic acid supplements; your body can best absorb folic acid from a pill. But still eat a diet rich in folic acid—spinach, etc.
- If all women consumed folic acid before and during pregnancy, Neural Tube Defects (NTD) up to 70% could be prevented.
- If you are obese, have a chronic condition such as diabetes, have had a previous child with a neural tube defect or are taking anti-seizure medication, you should see you doctor for a prescription of 1-4mgs of folic acid (approximately 10x the normal recommended amount) at least one month prior to conception.

## **5. Protect yourself from STIs and other infections**

### **Facilitator notes for 5—STIs and Infections**

- It can be especially dangerous to contract an STI or other infection just before or during pregnancy. The infection will be strongest and most detrimental to the baby when it first enters mom's body, so the closer in time that happens to when a baby is first developing, the more dangerous it can be to the baby's development.
- Some of these infections include: Chickenpox, Genital Herpes, German measles (rubella), Group B strep, Hepatitis B and C, HIV/AIDS, Herpes, Listeriosis, Slapped cheek (Fifth) disease, Toxoplasmosis, Urinary tract infections.

## **6. Avoid harmful chemicals, metals and other toxic substances around the home and in the workplace.**

Facilitator's guide for 6—toxic chemicals

- Lead- Studies have shown that exposure to high levels of lead during pregnancy may potentially cause problems such as miscarriage, preterm delivery, low birth weight, and, in some cases, developmental delays in infants.
- Mercury – Mostly in fish. Farmed salmon, flounder, perch, sole, cod, and catfish are all good low mercury choices.

**Things to Avoid:**

- Changing cat litter
- Hot baths, hot tubs and saunas
- Lead exposure from old pipes and faucets
- Mercury from broken bulbs and thermometers
- Pesticides and certain chemicals (check labels)

## **7. Make sure your vaccinations are up-to-date**

### **7. Facilitator's guide—Vaccinations**

- Some vaccinations for diseases and infections that can have negative or even devastating effects on a developing baby cannot be administered on pregnant women, so get them beforehand. Some of these include chickenpox (if the woman never had chickenpox) and MMR.
- Pregnant women and everyone in the home should get their flu shot and the whooping cough vaccine to protect themselves and their baby.

### **8. Manage and reduce stress and get mentally healthy**



### Facilitator's guide to 8—Stress and mental health

- Stress is a normal part of everyday life, but being 'stressed out' releases chemicals that can be bad for the baby. Prepare yourself and your life for lower stress levels during pregnancy. Mindfulness and meditation is a good option.
- *It is important not to take a blaming position here. Many people will be stressed out from work, family obligations, etc. Framing is important. Acknowledge that life is stressful and having everyday stress in your life is not going to damage the baby. Ensure that participants feel they can manage their stress, and help give suggestions. Encourage discussion.*
- **How do people in the group manage stress?**

## 9. Stop smoking (and get partners and family members to stop smoking too!)

### **Facilitator's guide for 9—Smoking**

- Smoking during pregnancy is incredibly dangerous. It is highly correlated to low birth weight, small for gestational age and stillbirth.
- In infancy, mom or anyone in the house smoking increases a baby's risk of dying of SIDS.
- The longer before pregnancy you can be a non-smoker, the better!
- Quit Line information on handout.

**10. Stop using street drugs as well as prescription medicine that are not yours.**

### Facilitator's guide to 10—Drugs and Medicine

- Many street drugs can have devastating effects on a developing baby. Additionally, if you are taking prescription medication that is not yours, your health could be seriously jeopardized. No doctor has affirmed that the medication is safe for you, or that the dosage you are taking is safe.
- If you struggle with substance use or abuse, there are great resources right here in the area to help lead you to recovery.
- Horizons- Care for pregnant women who use and abuse substances. Chapel Hill: 919-966-9803, [unhorizons.org](http://unhorizons.org)

**11. Talk to your doctor  
about the prescription  
medications you are taking.**



Facilitator notes for 11—your prescriptions

- It is extremely important to talk to your doctor before discontinuing any medication, even if you've heard it's bad to take during pregnancy. This includes medication for psychiatric conditions such as bipolar disorder, anxiety and depression, as well as medication for physical conditions.
- There is lots of new research coming out about medications that are safe to take during pregnancy. Much of this research is only accessible to medical professionals. Do not stop taking a medicine because of something you read online—only you and your provider together should make decisions about your individual situation.

**12. Reduce my alcohol intake before you try to get pregnant, and stop drinking while trying to get pregnant.**



### Facilitator's notes on 12—Alcohol

- *Ask the group what they think about pregnancy and alcohol. What have they heard?*
- Alcohol can affect a developing baby, and it affects the baby most severely early on in pregnancy.
- While alcohol at any point can harm a fetus and cause mental problems, 17-56 days gestation is the only time Fetal Alcohol Syndrome (FAS) can result. However, drinking later in pregnancy can put your baby at risk for an FAS spectrum disorder, which has no facial presentation, but results in various levels of mental retardation and learning delay.
- It is important to stop drinking when you begin trying to get pregnant. Many women don't know they're pregnant until well into the sensitive period for FAS.
- It is unethical to tell women to drink during pregnancy in order to study it, so researchers rely on self report (which often results in underreport) to obtain information about drinking during pregnancy. Therefore, there is no scientifically proven "safe" amount of alcohol to drink during pregnancy.

## 13. Stop partner violence

### Facilitator's notes on 13—Stop partner violence

- *It is important to acknowledge here that this is often a difficult subject to talk about. Emphasize that if any participants have additional questions, they can speak to you about it after class or on another day. Let them know that they will be sent home with resources and phone numbers.*
- Partner violence often increases during pregnancy and increases even more after the baby is born. If you are struggling with violence in your home, pregnancy can be an especially dangerous time.
- Additionally, the stress of physical and emotional violence as well as the physical danger is a difficult environment for a developing baby.

#### **Resources:**

- Chapel Hill—Compass center for children and families: (919) 929-7122
- Durham—Durham Crisis Response Center: (919) 403-6562.
- If you need another area, you can call either of these numbers and they can direct you to a resource in your area.

## **14. Manage health conditions such as asthma, diabetes, and overweight.**

Facilitator's notes for 14—Manage health conditions

- If gone untreated, these conditions can have adverse affects for the baby, such as low birthweight, premature birth, etc. Talk to your doctor about getting these conditions under control before you try to get pregnant.
- *This point is extremely important to emphasize: these conditions can have minimal impact if they are well managed, but if poorly managed or untreated, they increase risk of poor birth outcomes.*

## **15. Learn about my family's health history.**

### Facilitator's notes for 15—Family health history

- Unfortunately, there is nothing a medical professional can do to decrease the risk of a genetic disorder. But talking to a genetic counselor or geneticist can help a couple make an informed decision about reproduction, as well as ensure that the couple knows the testing available during pregnancy should they want to utilize it.
- Other non-genetic family history can also be important, such as a history of preeclampsia, preterm birth and gestational diabetes. Knowing this can help medical professionals be on heightened alert for these conditions.

## **16. Get regular check ups. See doctor as needed**



## 16. Facilitator's Guide - Doctor and Check ups

- Remember that your doctor is your best partner and guide for staying healthy. Seeing your doctor to ensure that you are in good health and making good choices for yourself and your body before pregnancy is very important to your own health as well as the health of your future baby.
- (Talk about some specific questions a medical professional could give guidance on, ie. diet, medications, how to help prevent the reoccurrence of a poor birth outcome)

## Questions?



### APPENDIX 3 - TAKE HOME INFORMATION



## WHAT SHOULD I EAT?

Eating healthy is a great habit to get in before becoming pregnant. Healthy weight is extremely important to achieve before pregnancy; physicians recommend a BMI between 18.5 and 25. You can calculate your BMI online using your height and weight.

- **Top 10 “brain foods” (good for your brain, and your future baby’s brain too!)**
  1. Legumes
  2. Eggs
  3. Nuts and seeds
  4. Olive oil
  5. Alaskan wild salmon
  6. Yogurt and kefir
  7. Whole grains
  8. Dark green vegetables (spinach, collards, kale and broccoli)
  9. Prunes, raisins and blueberries
  10. Oranges, red bell peppers and tomatoes
- **Top 10 “toxic foods”**
  1. Swordfish, shark, king mackerel, and tilefish
  2. Soft cheeses and unpasteurized milk
  3. Hot dogs, lunch meats, deli meats, raw or smoked seafood
  4. Raw or undercooked meats
  5. Unwashed vegetables, raw vegetable sprouts, and unpasteurized juices
  6. Liver
  7. Saturated fats, trans fats, and partially hydrogenated oils
  8. Added sugars
  9. Refined flour
  10. Herbal preparations (in large amounts)

## THE “JUST BEFORE WE GET PREGNANT” CHECKLIST

- I have been taking at least 400 mcgs of folic acid daily for at least one month (once you get pregnant, increase from 400 to 600 mcgs)
- I have talked to my doctor and I am up to date on all my vaccines (remember, you can't get some vaccines while you're pregnant!)
- I don't smoking and no one in my home smokes
- I am not drinking alcohol
- If I have any chronic health conditions, they are well controlled. I have also talked to my doctor about controlling them now and during pregnancy.
- I am currently avoiding:
  - Changing cat litter
  - Hot baths, hot tubs and saunas
  - Lead exposure from old pipes and faucets
  - Mercury from broken bulbs and thermometers
  - Pesticides and certain chemicals (check labels)
- I have talked to my doctor about all medications I am on and how safe they are during pregnancy.
- I am not taking any medications that were not prescribed to me or any street drugs
- I have lowered my stress levels and feel mentally healthy
- I have had a preconception appointment with a health provider
- I feel safe in my home
- I feel ready to take on the responsibility (and experience the joy!) of having a baby





## Resources

### **Prenatal Appointment—Make one as soon as you learn that you're pregnant!**

- NC Women's Hospital: (919) 966-2131
- UNC at Timberlyne: (919) 843-7005

### **Women's Health Information Center—offering pregnancy and birth classes**

- (919)843-8463
- [nchealthywoman.org](http://nchealthywoman.org)

### **Smoking**

- NC Quit Line is a great, free resource for people looking to quit smoking. Telephone Service is available 24/7 toll-free at **1-800-QUIT-NOW (1-800-784-8669)**. Quit coaching is available by phone in English and Spanish, with translation service available for other languages.

### **Partner Violence**

- Chapel Hill—Compass center for children and families: (919) 929-7122
- Durham—Durham Crisis Response Center: (919) 403-6562. If you need another area, you can call either if these numbers and they can direct you to a resource in your area.

### **Substance Use**

- Horizons—substance use and abuse services for pregnant woman and women who and trying to get pregnant. (919) 966-9803



**APPENDIX 4 – EXIT SURVEY**

Thank you for attending “Preparing for Pregnancy: Mind, Body, and Spirit.” Please answer the following questions so we can continue to improve our class.

1. What are three things you learned during this class? \_\_\_\_\_

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2. What are three concrete steps you will take to improve your own (or your family’s) preconception health upon leaving this class? \_\_\_\_\_

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3. Did taking this class change your mind about when you plan on getting pregnant? Why or why not? \_\_\_\_\_

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Additional comments: \_\_\_\_\_

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